

The Effect of Green Supply Chain Management on Energy and Economic Environment Conditions of Company Financial Performance

Pranoto¹, Udin Ahidin², Ali Maddinsyah²

^{1,2}Universitas Pamulang, Banten, Indonesia

¹my.manuscript03@gmail.com

Abstract— This research intends to find out and further analyze the influence of the application of Green Supply Chain Management (GSCM) policy on energy and the condition of the Indonesian economy to the company's financial performance and its implication for the value of the company. The population of this study was mining and energy companies in the various sectors of the mining and energy subsection listed on the Indonesia Stock Exchange which numbered 13. This study estimated the factors that influence financial performance and their implication for firm value. The company's financial performance is measured by using return on assets (ROA). Factors that influence ROA used in this study: debt to asset ratio (DAR), debt to equity ratio (DER), energy policy ratio, institutional ownership, exchange rate, and interest rate. The research method used in this study is quantitative research using secondary data onto the period of 2010 - 2015. This study used a purposive sampling method of collecting data samples and companies that met the sampling criteria amounted to 12, while the data analysis method used was the data regression method. Based on the research results, the factors that influence financial performance significantly are the rupiah exchange rate, interest rates, DAR, and energy policy. Then the variables that affect the company's value significantly are ROA and the Rupiah exchange rate. Then Based on the R square value formed, the independent variable can explain the ups and downs of ROA of 53.28% and the rise and fall of the company's value of 48.09%.

Keywords— GSCM, Energy Policy, Environmental Conditions, Return on assets, Debt to equity ratio (DER), Debt to asset ratio (DAR), Firm Value.

1. Introduction

Supply chain management (SCM) requires the integration and coordination of business processes and strategy alignment throughout the supply chain for the purpose of satisfying the final customers of the supply chain a good Energy Policy mechanism

is needed in carrying out the company's operations, by applying the principles of Energy Policy. It is expected that the policies taken are transparent in accordance with the prevailing conditions, as well as the operational implementation of company policies based on the principles of accountability, accountability, independence and equality. This is very necessary because unlike an individual business entity where the owner has full control over the company's operations, the company in the form of an open company have a separation of management and investors, which is considered feasible because there are many capital owners in the public company.

Ownership structure is also important to agency theory and Energy Policy because most agency conflict arguments are caused by the separation of ownership and management. Ownership structure is the distribution of equity which refers to the portion of planting. One example of the Energy Policy deviation that has occurred in Indonesia is the case of PT. Lippo in 2003 and PT. Kimia Farma which manipulated its financial statements, thus creating asymmetrical information about management and shareholders [1].

Based on research conducted by [2] the GSCM policy taken by a company can affect the value of the company. Company value is the market value owned by a company [3]. Every company that has gone public will have a company value that applies to the capital market, where if there is an increase in this value then automatically there will be an increase in the prosperity or value held by each of its shareholders [4].

The implementation of financial decisions or financial policies in a company is strongly influenced by the availability of company funds originating from internal financing sources and external funding sources. Internal funding consists

of profit retention, while external funding consists of debt and issuance of shares, [5].

Because in several Indonesian public companies using sources of capital originating from foreign investors coupled with production raw materials that are still imported from abroad, the cost of capital, and production costs will greatly depend on

changes in the exchange rate of the rupiah against the US Dollar. Automatic changes in the exchange rate of the Rupiah against the US Dollar will also have an impact on changes in Bank Indonesia interest rates that are used as the basis of investors or banks as intermediaries in channeling their funds of companies.

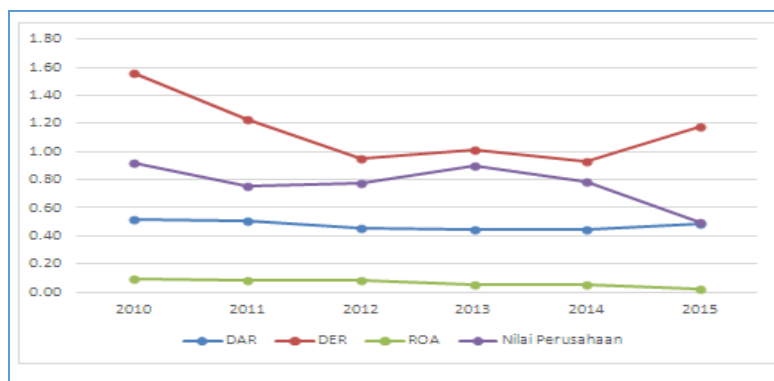


Figure 1. Debt to asset ratio (DAR), Debt to equity ratio (DER), Average Return on assets (ROA), and Mining and Energy Company Values Various Industry Sectors Mining and Energy Subsectors Listed on the Indonesia Stock Exchange (BEI) Period 2010 -2015

Determination of GSCM will always be a major problem of the body of the company due to several factors both internal and external influencing. Based on existing phenomena, it can be concluded that there is a gap between the theories applied to the mining industry and energy with the empirical conditions of the mining and energy industries. Therefore, this study intends to find out more of the influence of Energy Policy, Indonesian macroeconomic environmental conditions, and GSCM policies on the company's financial performance and its implications for firm value. The object of research that will be used in this study is mining and energy companies listed on the Indonesia Stock Exchange.

2. Literature Review

2.1 The value of the company

Numerous studies related to impact of GSCM on companies' performance in various countries confirm that due implementation of green supply chain management enhances environmental, operational, organizational, economic and financial performance of the company irrespective of the country or region. In terms of financial outcomes, the GSCM-caused reduction of costs for energy consumption, material purchasing, waste

treatment and waste disposal, attracting new customers and expanding to new high-margin and high-income markets, including export ones, will lead to the significant growth of revenues and EBITDA. Therefore, owners and management of companies shall be encouraged to implement green practices, including GSCM, in everyday operation of the companies. The value of a company can provide maximum prosperity to shareholders if the company's stock price increases. The higher of stock price, the higher of prosperity of shareholders. Company values to include a company performance indicator that becomes a calculation for investors if they want to invest in a company. According to [6], "Company values is the price that prospective buyers are willing to pay if the company is sold". The development or value trends of a company that show developments from year after year automatically state that there is an increase in shareholder prosperity.

According to [7], Company values is the market value of each company which is determined by the expected return to the stock. Therefore, it is very important to managers to be able to maximize company performance so that the company's stock prices increase. The factors that influence stock prices are two, namely internal and external factors. Internal factors consist of earnings per share, amount to cash dividends distributed among shareholders, return on assets and the level of risk

of beta returns. While the external factors are such as supply and demand for shares in the capital market, interest rates, currency exchange rates, inflation, and taxes.

2.2 Green Supply Chain Based On the Circular Economy

GSCM became an ever growing complex challenge for organizations in nowadays world scenario. Suppliers, customers, government, legal defense organizations are increasingly demanding solutions and responses from companies that cause significant environmental impacts in their production cycle activities. Companies in their operations will surely produce cash flow that can be used by company managers to finance the company's operations. The advantages of free cash flow after all cost are borne. The company has free cash flow which can usually be used to increase the prosperity of its shareholders and the expansion of the company. But a company manager who has a small percentage of ownership in a company will have the urge to think of his own interests compared to the interests in shareholders, so that the utilization of the company's free cash flow is not optimal. This simple thought is called the free cash flow hypothesis, [8].

This hypothesis has implication for the company's GSCM, where if the company's dividend payout ratio levels are high then it can reduce the amount of free cash flow that can be utilized by managers in the company. Furthermore, debt policy can also reduce the effect of the free cash flow hypothesis, but this debt policy can increase the risk of bankruptcy if the company does not have good business planning and strategy. GSCM provides a range of benefits for companies, such as reduction of manufacturing, logistics and overall business costs; profit maximization; environmental impact (reductions in waste, carbon, energy savings, etc.); customer satisfaction; brand image improvement; revenue and market share improvement.

2.3 Financial performance

Profitability ratio is an analysis of earnings and various elements that make up profits, an important aspect, because the survival and success of a company depends on its ability to generate profits. According to [9] profitability ratios are indicators that can be used to assess the effectiveness of a company in using its capital to generate profits or returns expected by shareholders. In [10] explains that profitability ratios show the company's ability to generate profits from its operational activities such as planning, investing, production, sales, and so on. According to [11], the profitability ratio is

used to determine the company's performance in the active use of the company.

2.4 Signaling Theory

In [12] first stated that the company's stock price will change when there is a change in dividend payments. With the increase in dividend distribution provides information (a sign) for investors that companies in the future have good prospects. Furthermore, [13] based on economic theory that is asymmetrical information is one of the causes of market failure where due to incomplete information about the two parties causes one party to be harmed.

Then there are some other researchers suggesting this, among others: [7], followed by [14-15] developing a signaling model: which explains the company's GSCM based on asymmetric information problems of managers who are well-informed and outside investors who are poorly informed. This model is based on the idea that managers who have good information about the company will try to convey this information to outside investors so that the company's stock price increases. But because there is an asymmetric information problem, managers cannot just announce such good information because it can be the manager of another company to announce the same thing, which makes foreign investors less trustworthy. Investors must wait a long time to prove the truth about the manager's remarks [8].

2.5 Efficiency Market Hypothesis Theory

The concept of efficient capital markets was first put forward by [16]. Capital markets are said to be efficient if no one, both individual investors and institutional investors, will be able to obtain abnormal returns, after adjusting to risk, using existing trading strategies. That is, the prices formed in the market reflect the information that exists or "stock prices reflect all available information". Another expression states that in an efficient market the prices of assets or securities quickly and intact reflect available information about assets or securities.

2.6 Governance and Organization

Various studies have been conducted in connection with the interaction between the organization and its environment. There are at least two types of organizations that can be distinguished according to the development of various theories about

organization-environment theories. The first form is "the weak form" with an emphasis on the hypothesis, how various organizations respond to the pressure in their environment (environmental forces).

The organization ecology theory, which is a derivation and model on natural selection known in biology, holds that every organization is part of a large system that must have the ability to adapt to survive in its competitive environment. According to [17] this perspective gives emphasis to the importance of "structural isomorphism", focusing on the importance of "conformity" between organizations "organization-fit" with the environment in which the organization is located. However, this view acknowledges that organizational adaptability is limited to nature, which is summarized in the "organization inertia" phenomenon. This phenomenon is characterized by the emergence of internal politics in organizations and increasing age, size, and complexity of an organization. Thus, if an organization is unable to adapt to its changing environment, then in accordance with the nature of natural law, the organization will die or die automatically.

2.7 Agency Theory

Much literature about energy policy stems from the relationship between principal and agent which then raises agency problems. Agency problems are generally influenced by the "ownership structure". When ownership is spread as is the case of the US and UK, agency problems arise from conflicts of interest between managers and shareholders, [18]. First introduced by [9]: Separating the problem of "Ownership and Control".

The separation between ownership and control carried out by managers can lead to acts of selfishness by managers. When there is a conflict between management and shareholders, the company's value is not optimal where there is a difference between the theoretical maximum value and the actual value of the company because of agency costs, [19]. In [20] to argue that ownership concentration has a positive impact on firm value because concentrated ownership will minimize agency cost. According to agency theory, [21], define agency costs as the amount of costs incurred relating to structuring, administering and enforcing contracts (both formal and informal) plus residual loss. Enforcement costs include monitoring and bonding costs (formation/binding of existing

relationships), namely several resources spent by the principal (shareholders/company owners) and agents (managers) to ensure the running of contract enforcement. Residual costs include opportunity loss when the contract is optimal but not implemented perfectly. So that it can be said that agency costs cover all costs that refer to contracting costs, transaction costs moral hazard costs, and information costs.

2.8 Energy Policy

Based on the strategic perspective of circular economy, the design of the performance evaluation in GSCM must align with the 3R principles of circular economy to achieve sustainable development. Thus, GSCM should not only focus on environmental concerns, but at the same time it should focus on reaching and maintaining operational efficiency, and focus on the economic, logistics, operational, and marketing objective. Therefore, performance assessment is crucial to all companies in planning, designing, implementing and monitoring their operations. It is used to evaluate the efficiency and effectiveness in order to assess the current situation of the organization or to benchmark with other companies. Based on the previous Agency Theory, the concept of energy policy can be understood. Energy policy must pay attention to the possibility of a conflict of interest in principals and agents. But if it can relate to trust in principals, agents can also be motivated to do their best for stakeholders to gain a good reputation in order to reach the market in the future. Agents should also have external and internal stakeholders' networks so that shared interests can be fulfilled. The role of the board of directories whose members come from outside the company can provide access to critical resources and to influential parties of the community to protect the interests in the company and its stakeholders. In general, energy policy is a good system and structure for managing companies with the aim at increasing shareholders value and accommodating various stakeholders in the company (stakeholders) such as shareholders, consumers, workers, the government and the wider community.

In [22] states that the energy policy system can differ depend on the mechanism of the company owner influencing the manager. Managerial ownership is share ownership owned by management (agents) in a company, [23], found that managerial ownership succeeded in becoming

a mechanism to reduce agency problems by managers by aligning manager's interests with shareholders. Their research found that the interests in managers and external shareholders can be combined if share ownership by managers is enlarged so that managers will not manipulate profits for their benefit.

GSCM theory explains the policy of composition of capital sources (internal and external) which aims to increase company value and according to [24], optimal GSCM as mentioned in mechanics industry [25] is a GSCM that can minimize the company's capital costs, but there is no optimal GSCM can be produced by a company due to many factors that influence it and it is difficult to predict it correctly.

2.9 Currency Exchange Rate

The capital market in Indonesia has experienced globalization where investors who invest their capital not only come from within the country but also come from abroad. Each of these investors has a reference value of the value of capital to be invested, namely the value of the currency of each country or the exchange rate or exchange rate. Currency exchange rate is a comparison of the value of a country's currency against the value of another country's currency. Based on the results of a study conducted by [26] the exchange rate of the currency is related to inflation and interest rates, which are some of the variables that become the calculation in determining the composition of GSCM policies. The basic theory that underlies the relationship between inflation, interest rates and currency exchange rates are two, namely the theory of Purchasing Power Parity (PPP) and International Fisher Effect (IFE).

2.10 Interest Rate

All sources of funds used by companies to finance their projects have a capital cost or an expected return. The expected return value expected by investors will be adjusted to the prevailing interest rate, because these investors want to make a profit. In [27-30] state that interest rates in the balance of a market are prices of time, where prices are the result of returns that equate loans and lending in economic activities. An interest rate will tend to rise if the amount of money is less and the demand for more money. Vice versa, the interest rate will tend to fall if the amount of money is more or bigger and the demand for money is less.

3. Methods

The research method used is quantitative. This quantitative approach prioritizes numbers and statistics to answer specific research questions or hypotheses, and to predict that a variable affects other variables. Furthermore, it is expected that the results of the analysis and discussion can be drawn conclusions and recommendations are expected to be useful for several parties concerned.

The population was used for this study were mining and energy companies that were listed on the Indonesia Stock Exchange from 2010 to 2015 totaling 13 companies. The selection of samples in this study was determined by purposive sampling with the aim of getting a representative sample according to the specified criteria.

Based on these criteria, the number of mining and energy companies listed on the Stock Exchange and consistently existed during the study period and generated positive profits (from 2010 to 2015) of 12 companies.

4. Result and Discussion

4.1 Result

The company's financial performance is measured by using return on assets (ROA). The factors that influence the ROA used in this study consist of economic environmental factors, namely: the exchange rate of Rupiah against US Dollar, and interest rates, then the GSCM that is proxied by the debt to asset ratio (DAR), and debt to equity ratio (DER), then energy policy consisting of energy policy ratios and institutional ownership. Furthermore, the implications for company value calculated using Tobins-q Value are influenced by financial performance measured by using return on assets (ROA) and their determinants, which consist of: the exchange rate of Rupiah against US Dollar, interest rates, DAR, DER, ratio board of commissioners, and institutional ownership. The population used in this study is mining and energy companies listed on the Indonesia Stock Exchange during 2010 to 2015.

4.2 Determinants of Financial Performance

4.2.1 Description of Statistical Data

Before further analysis the estimation of the effect of the debt to asset ratio (DAR), debt to equity ratio

(DER), energy policy ratio, institutional ownership, the exchange rate of Rupiah to US Dollar, and interest rates on financial performance is proxied by return on assets (ROA) and its implications for the value of company companies, it is necessary to first describe the data description of each variable

used in this study [31-35]. The description of statistical data consists of mean, median, maximum, minimum, standard deviation, skewness, kurtosis and Jarque-Berra statistics and p-value. Mean, median, maximum, and minimum values.

| | DAR | DER | KEPEMILI KAN_INS TITUSI | KURS_RUPI AH | NILAI_PER USAHAAN | PERSentase_J ML_KMS_IND | ROA | SUKU_BUNGA |
|-----------------------------|-----------|----------|-------------------------------|-----------------|----------------------|----------------------------|-----------|------------|
| Mean | 0.475027 | 1.143483 | 0.647214 | 10974.17 | 0.772634 | 0.372756 | 0.063242 | 0.068368 |
| Median | 0.490000 | 0.960000 | 0.598100 | 10875.00 | 0.527750 | 0.333333 | 0.051300 | 0.070000 |
| Maximum | 0.800000 | 4.990000 | 0.956500 | 13726.00 | 3.607242 | 0.666667 | 0.240900 | 0.077500 |
| Minimum | 0.190156 | 0.250000 | 0.250000 | 8946.000 | -0.100330 | 0.250000 | -0.057700 | 0.057500 |
| Std. Dev. | 0.159846 | 0.813959 | 0.201987 | 1863.687 | 0.769276 | 0.072612 | 0.063928 | 0.007952 |
| Skewness | -0.051063 | 1.752186 | 0.063157 | 0.164554 | 1.812936 | 2.007128 | 0.882900 | -0.177297 |
| Kurtosis | 1.932957 | 8.182332 | 1.992309 | 1.349642 | 5.983258 | 8.431066 | 3.421331 | 1.295629 |
| Jarque-Berra Probability | 3.447030 | 117.4116 | 3.094188 | 8.495976 | 66.14033 | 136.8322 | 9.886705 | 9.091846 |
| | 0.178438 | 0.000000 | 0.212866 | 0.014293 | 0.000000 | 0.000000 | 0.007131 | 0.010610 |
| Sum | 34.20191 | 82.33079 | 46.59940 | 790140.0 | 55.62967 | 26.93843 | 4.553400 | 4.922500 |
| Sum Sq. Dev. | 1.814093 | 47.03961 | 2.895712 | 2.47E+08 | 41.90766 | 0.374352 | 0.290164 | 0.004489 |
| Observations | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 |

Sumber: Eviews 8

Figure 2. Description of statistical data

4.2.2 Selection of Panel Data Regression Model

The panel data regression model used in this research is based on three models, namely: common effect, fixed effect, and random effect. The selection of panel data regression models aims to choose which one will be used in this study to be analyzed further using paired tests for each model.

4.3 Two Model Pairing Test

4.3.1 Chow Test (Common Effect vs Fixed Effect)

The chow-test is used to select the model used whether it should use the common effect or the fixed effect method.

H₀: The model follows the common effect

H₁: The model follows the fixed effect method

If the value of F count (F-test) and chi-square test is greater than α (0.05), then H₀ is accepted. So that the model used is the common effect. However, if the calculated F value (F-test) and chi-square test are smaller than α (0.05), then H₀ is rejected. This means that the model used is the fixed effect method.

4.3.2 Langrange Multiplier Test (Common Effect vs Random Effect)

The Langrange Multiplier (LM) test is used to find out which model is better. It is better to be

estimated by using the common effect model or by the random effect model.

H₀: The model follows the common effect

H₁: The model follows the random effect model

Based on the results of the test it can be seen that the probability value, Breusch-Pagan is 0.0000. Based on that, it can be concluded that random effects are better than common effect models in estimating panel data regression.

4.3.3 Hausman Test (Fixed Effect vs Random Effect)

The Hausman test is done to choose which model is better, whether using a fixed effect model or random effect model. This is done after the previous test.

H₀: The model follows the random effect model

H₁: The model follows the fixed effect method

Based on the results of the Hausman test calculation shown in figure 2 conclude that the Chi-Square probability value of 1.0000 > alpha 0.05 (5%) H₀ is accepted, then the panel data regression used in this study is a random effect model.

4.4 Estimation Analysis of Panel Data Regression Models

Estimation Analysis of Panel Data Regression Models as follows:

| Dependent Variable: ROA Method: Panel EGLS (Cross-section random effects) Date: 09/01/17 Time: 15:31 Sample: 2010 2015 Periods included: 6 Cross-sections included: 12 Total panel(balanced) observations: 72 Swamy and Arora estimator of component variances White cross-section standard errors & covariance (d.f. corrected) WARNING: estimated coefficient covariance matrix is of reduced rank | | | | |
|---|-------------|--------------------|-------------|--------|
| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
| C | 0.199723 | 0.039342 | 5.076640 | 0.0000 |
| DER | -0.003910 | 0.004988 | -0.783754 | 0.4360 |
| DAR | -0.093224 | 0.025695 | -3.628058 | 0.0006 |
| PERSENTASE_JML_KMS_IND | -0.035024 | 0.023531 | -1.488402 | 0.1415 |
| KEPEMILIKAN_INSTITUSI | 0.086189 | 0.033745 | 2.553500 | 0.0130 |
| KURS_RUPIAH | -1.82E-05 | 1.20E-06 | -15.15044 | 0.0000 |
| SUKU_BUNGA | 1.018778 | 0.431843 | 2.359142 | 0.0213 |
| Effects Specification | | | | |
| | | S.D. | | Rho |
| Cross-section random | | 0.058595 | | 0.8200 |
| Idiosyncratic random | | 0.027454 | | 0.1800 |
| Weighted Statistics | | | | |
| R-squared | 0.532846 | Mean dependent var | 0.011881 | |
| Adjusted R-squared | 0.489724 | S.D. dependent var | 0.037693 | |
| S.E. of regression | 0.026925 | Sumsquared resid | 0.047124 | |
| F-statistic | 12.35672 | Durbin-Watson stat | 1.274092 | |
| Prob(F-statistic) | 0.000000 | | | |
| Unweighted Statistics | | | | |
| R-squared | 0.244448 | Mean dependent var | 0.063242 | |
| Sumsquared resid | 0.219234 | Durbin-Watson stat | 0.287818 | |
| Estimation Command: | | | | |
| LS(CX=R,CQ=CXWHITE)ROA C DER DAR PERSENTASE_JML_KMS_IND KEPEMILIKAN_INSTITUSI KURS_RUPIAH SUKU_BUNGA | | | | |
| Estimation Equation: | | | | |
| ROA= C(1)+ C(2)*DER + C(3)*DAR + C(4)*PERSENTASE_JML_KMS_IND + C(5)*KEPEMILIKAN_INSTITUSI + C(6)*KURS_RUPIAH + C(7)*SUKU_BUNGA + [CX=R] | | | | |

Figure 3. Estimation of the factors that influence ROA (Random Effect method)

Based on the best estimation results using paired test results, the panel data regression model used in estimating the factors that influence the financial performance of mining and energy companies in this study is a random effect model.

4.5 Partial Estimation of the Data Panel Regression Model

The estimation of factors that influence financial performance, namely the exchange rate of the Rupiah against US Dollar, interest rates, DAR, DER, energy policy ratio, and institutional ownership using a random effect model.

Equation:

$$\begin{aligned}
 \text{ROA} = & 0.199723019588 - \\
 & 0.00390965819949 \cdot \text{DER} - \\
 & 0.0932237145586 \cdot \text{DAR} - \\
 & 0.0350242887883 \cdot \text{TAGE_JML_KMS_IND} + \\
 & 0.0861685373258 \cdot \text{INSTITUTIONAL_OWNERSHIP} - \\
 & 1.82330766693\text{e-}05 \cdot \text{RUPIAH_RATE} + \\
 & 1.01877800115 \cdot \text{INTEREST_RATE} + [\text{CX}=\text{R}]
 \end{aligned}$$

From this equation, then we test each panel data regression coefficient that affects the company's financial performance using the t-test. The t-test is conducted to determine whether each of the independent variables used in this study can significantly influence the company's financial

performance as a dependent variable with an alpha level $\alpha = 0.05$. For significant variables each will be interpreted and compared with the research hypothesis.

4.5.1 Effect of Debt to equity ratios (DER) on Financial Performance

Based on the t-test shows that the DER variable has a negative effect on financial performance (ROA) with the regression coefficient $\beta_3 = -0.003910$ but is not significant, where the probability value is t-statistic (0.4360) more than $\alpha = 0.05$.

4.5.2 Effect of Debt to Asset Ratio (DAR) on Financial Performance

Based on the t-test shows that the DAR variable significantly influences the negative coefficient on financial performance (ROA) with the regression coefficient $\beta_4 = -0.093224$, where the probability value of t-statistic (0.0006) is less than $\alpha = 0.05$ which means. The interpretation of $\beta_4 = -0.093224$ are that if there is a 1% increase in the amount of DAR, it will cause a decrease in the size of the company's financial performance (ROA) of 0.093224%.

4.5.3 *Effect of the Energy Policy Ratio on Financial Performance*

Based on the t-test shows that the energy policy ratio variable has a negative effect on financial performance (ROA) with the regression coefficient $\beta_5 = -0.035024$ but not significant, where the t-statistic probability value (0.1415) is more than $\alpha = 0.05$.

4.5.4 *Effect of Energy Policy on Financial Performance*

Based on the t-test shows that institutional ownership variables have a positive and significant effect on financial performance (ROA) with a regression coefficient $\beta_6 = 0.086169$ with a confidence level of 95%, where the probability value of t-statistic (0.0130) is less than $\alpha = 0.05$. Interpretation of $\beta_6 = 0.086169$ is that if there is a 1% increase in the amount of institutional ownership, it will cause an increase in the size of the company's financial performance (ROA) of 0.086169%.

4.5.5 *Effect of Rupiah Exchange Rate on US Dollar Against Financial Performance*

Based on the t-test shows that the rupiah exchange rate variable has a negative and significant effect on financial performance (ROA) with a regression coefficient $\beta_1 = -1.823307$, where the probability value of t-statistic (0.0000) is less than $\alpha = 0.05$. The interpretation of $\beta_1 = -1.823307$ are that if there is a depreciation of the Rupiah against the US Dollar by 1%, it will cause a decrease in the size of the company's financial performance (ROA) of 1.823307%.

4.5.6 *Effect of Interest Rates on Financial Performance*

Based on the t-test shows that the interest rate variable has a positive and significant effect on Financial Performance (ROA) with a regression coefficient $\beta_2 = 1.018778$ with a confidence level of 95%, where the t-statistical probability value (0.0213) is less than $\alpha = 0.05$. Interpretation of $\beta_2 = 1.018778$ is if there is an increase in 1% in the amount of interest rates, it will cause an increase in the size of the company's financial performance (ROA) of 1.018778%.

4.6 **Estimation of Simultaneous Data Panel Regression Models**

Based on the panel data regression coefficient test using the t-test concluded that the Rupiah exchange rate, interest rates, DAR and institutional ownership significantly affect financial performance. While testing equations for all variables in the model was carried out using the F-test. The F test results as seen in figure 3 show the F-Statistic value of 12.35672 with a probability value of 0.000000 smaller than $\alpha = 0.05$. This means that the variable DER, DAR, energy policy ratio, energy policy, the exchange rate of Rupiah against US Dollar and interest rates affect the company's financial performance (ROA) with a confidence level of 99%.

For testing for goodness of fit measured by terminated coefficient (R²) in figure 3, it shows several 0.532846. This means that variations in changes in fluctuations in financial performance (ROA) of a company can be explained by the DER, DAR, energy policy ratio, energy policy, the exchange rate of Rupiah against US Dollars and interest rates with a percentage of 53.28%, while the remainder is 46, 72% is explained by other variables outside of this research model. For the terminated coefficient that is adjusted (R²adjusted) shows the amount of 0,489724 which means that after considering the freedom of degrees of the model used, all independent variables used in this study can still explain the company's financial performance of 48.98%.

4.7 **Estimation of Panel Data Regression Models for Each Company**

From 12 companies in the random effect panel data regression equation for each company can be summarized as follows:

- 1) Companies that have a sensitivity to changes in financial performance as indicated by the greatest return on assets (ROA) during the 2010-2015 period are PT. Selamat Sampurna with a total constant value of $[C_i + 0,199723] = 0,199723 + 0,125460 = 0,325183$.
- 2) Companies that have a sensitivity to changes in financial performance as indicated by the smallest return on asset (ROA) during the 2010-2015 period are PT. Multistrada with a total constant value of $[C_i + 0,199723] = -0,051713 + 0,199723 = 0,14801$.

4.8 Implications for Corporate Values

4.8.1 Two Model Pairing Test

4.8.2 Chow Test (Common Effect vs Fixed Effect)

The chow-test is used to select the model used whether it should use the common effect or the fixed effect method. This test is carried out by statistical test F or chi-square.

H₀: The model follows the common effect

H₁: The model follows the fixed effect method

Based on the results of calculations, conclude that from the chow-test, it is seen that the probability values F test and chi-square test is smaller than $\alpha = 0.05$ (5%), so H₀ is rejected and H₁ is accepted, which means that the fixed effect model is better used in estimating data panel regression than the common effect model.

4.8.2 Test Lagrange Multiplier (Common Effect vs Random Effect)

The Langrage Multiplier (LM) tests is used to find out which model is better, is it better to be estimated by using the common effect model or by the random effect model. The hypotheses used in the LM test are as follows:

H₀: The model follows the common effect

H₁: The model follows the random effect model

Based on the output from figure 3, it can be seen that the Breusch-Pagan probability value is 0.0000, so it can be concluded that random effects are

better than the common effect models in estimating panel data regression.

4.8.3 Hausman Test (Fixed Effect vs Random Effect)

The Hausman test is done to choose which model is better, whether using a fixed effect model or random effect model. This is done after the previous test. The hypothesis in Hausman testing is as follows:

H₀: The model follows the random effect model

H₁: The model follows the fixed effect method

If the p-value is greater than α , then H₀ is rejected and the model used is the fixed effect model. However, if the p-value is smaller α , then H₀ is accepted. This means that the model used is a random effect model. Based on the results of the Hausman test calculation shown in figure 3 it was concluded that the probability value of Chi-Square of $1.0000 > \alpha 0.05$ (5%) H₀ was accepted then the panel data regression used in this study was a random effect model.

4.9 Estimation Analysis of Panel Data Regression Models

Estimation Analysis of Panel Data Regression Models as follows:

| Dependent Variable: NILAI_PERUSAHAAN | | | | |
|---|-------------|--------------------|-------------|----------|
| Method: Panel EGLS (Cross-section random effects) | | | | |
| Date: 09/01/17 Time: 15:21 | | | | |
| Sample: 2010 2015 | | | | |
| Periods included: 6 | | | | |
| Cross-sections included: 12 | | | | |
| Total panel (balanced) observations: 72 | | | | |
| Swamy and Arora estimator of component variances | | | | |
| White cross-section standard errors & covariance (d.f. corrected) | | | | |
| WARNING: estimated coefficient covariance matrix is of reduced rank | | | | |
| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
| C | -1.740437 | 0.557565 | -3.121496 | 0.0027 |
| DER | 0.200102 | 0.186478 | 1.073056 | 0.2873 |
| DAR | 0.542816 | 0.792661 | 0.684802 | 0.4959 |
| PERSENTASE_JML_KMS_IND | -0.054654 | 0.688342 | -0.079400 | 0.9370 |
| KEPEMILIKAN_INSTITUSI | -0.422537 | 0.681948 | -0.619604 | 0.5377 |
| ROA | 11.74544 | 1.343592 | 8.741822 | 0.0000 |
| KURS_RUPIAH | 0.000105 | 5.27E-05 | 1.999787 | 0.0498 |
| SUKU_BUNGA | 6.168282 | 7.620785 | 0.809402 | 0.4213 |
| Effects Specification | | | | |
| | | | S.D. | Rho |
| Cross-section random | | | 0.472130 | 0.5650 |
| Idiosyncratic random | | | 0.414291 | 0.4350 |
| Weighted Statistics | | | | |
| R-squared | 0.480979 | Mean dependent var | | 0.260570 |
| Adjusted R-squared | 0.424211 | S.D. dependent var | | 0.530513 |
| S.E. of regression | 0.402557 | Sumsquared resid | | 10.37135 |
| F-statistic | 8.472713 | Durbin-Watson stat | | 1.834050 |
| Prob(F-statistic) | 0.000000 | | | |
| Unweighted Statistics | | | | |
| R-squared | 0.551751 | Mean dependent var | | 0.772634 |
| Sumsquared resid | 18.78507 | Durbin-Watson stat | | 1.138795 |

Figure 4. Estimation of Factors that Influence Company Values (Random Effect method)

4.9.1 Effect of Debt to equity ratios (DER) on Company Values

Based on the t-test shows that the DER variable has a positive effect on firm value of a regression coefficient $\beta_{10} = 0.200102$ but not significant where the probability value of t-statistic (0.2873) is more than $\alpha = 0.05$.

4.9.2 Effect of Debt to Asset Ratio (DAR) on Company Values

Based on the t-test shows that the DAR variable has a positive effect on the value of the company with the regression coefficient $\beta_{11} = 0.542816$ but not significant, where the probability value of t-statistic (0.4959) is more than $\alpha = 0.05$.

4.9.3 Effect of the Energy Policy Ratio on Company Values

Based on the t-test shows that the energy policy% tase variables has a negative effect on firm value of the regression coefficient $\beta_{12} = -0.054654$ but does not significantly affect the firm value, where the probability value of t-statistic (0.9370) is more than $\alpha = 0.05$.

4.9.4 Effect of Institutional Ownership on Company Values

Based on the t-test shows that the institutional ownership variable negatively affects the value of the company with the regression coefficient $\beta_{13} = -0.422537$ but does not significantly affect the value of the company, where the probability value is t-statistic (0.5377) more than $\alpha = 0.05$.

4.9.5 Effect of ROA on Company Values

Based on the t-test shows that the ROA variable has a positive and significant effect on firm value with the regression coefficient $\beta_{14} = 11.74544$ with a confidence level of 95%, where the probability value of t-statistic (0.0000) is less than $\alpha = 0.05$. The interpretation of $\beta_{14} = 11,74544$ is if there is a 1% increase in the amount of ROA, it will cause an increase in the size of the company value of 11,74544%.

4.9.6 Effect of Rupiah Exchange Rate on US Dollar Against Company Values

Based on the t-test shows that the rupiah exchange rate variables has a positive and significant effect on the value of the company with a regression

coefficient $\beta_8 = 0.000105$ with a confidence level of 95%, where the probability value t-statistic (0.0498) is less than $\alpha = 0.05$. The interpretation of $\beta_8 = 0.000105$ is that if there is a depreciation of the Rupiah against the US Dollar of 1%, it will cause an increase in the value of the company by 0.000105%.

4.9.7 Effect of Interest Rates on Company Values

Based on the t-test shows that the interest rate variable has a positive but not significant effect on firm value of the regression coefficient $\beta_9 = 6.168282$, where the probability value of t-statistic (0.4213) is more than $\alpha = 0.05$.

4.10 Estimation of Simultaneous Data Panel Regression Models

The F tests results as seen in figure 4 show the value of the F-Statistic each of the 8.472713 with their respective probability values of 0.000000, smaller than $\alpha = 0.05$, which means that H_0 is rejected. This means that the variable DER, DAR, energy policy ratio, energy policy, ROA, the exchange rate of Rupiah against the US Dollar, and interest rates affect the value of companies with confidence levels of 99%.

For testing for goodness of fit measured by terminated coefficients (R^2) in table 3 shows the respective numbers of 0.480979. This means that variations in changes in fluctuations in company value can be explained by the variable DER, DAR, energy policy ratio, energy policy, ROA, the exchange rate of Rupiah against US Dollar, and interest rates with a percentage of 48.09% while the remainder is 51, 91% is explained by other variables outside of this research model. For the adjusted terminated coefficient (R^2 adjusted), it shows the number of each of them is 0.424211, which means that after considering the degree of freedom of the model used, all the independent variables used in this study can still explain the company's value of 42.42%.

4.11 Estimation of Panel Data Regression Models for Each Company

From 12 companies in the random effect panel data regression equation for each company can be summarized as follows [36-40]:

- 1) Companies that have the greatest sensitivity to changes in value companies during the 2010-2015 period are PT.

Multistrada with a total constant value of $[C_i - 1,740437] = 0.509372 - 1,740437 = -1,231065$.

- 2) Companies that have the smallest sensitivity of changes in the company during the 2010-2015 period are PT. Astra International with a total constant value of $[C_i - 1,740437] = -0,842814 - 1,740437 = -2,583161$.

5 Discussion

5.1 Determinants of Financial Performance

5.1.1 Debt to equity ratio (DER)

Empirical evidence of this study shows that DER does not significantly affect company financial performance (ROA) with negative coefficient signs. This means that the increase in the DER ratio does not affect the financial performance (ROA) of mining and energy companies. This is because in the calculation component of ROA there is no equity value. Because ROA measures management effectiveness in outlining in generating profits through existing assets so that the components that are calculated is total debt and total assets.

5.1.2 Debt to asset ratio (DAR)

Empirical evidence of this study shows that DAR significantly affects the company's financial performance with negative coefficient signs. This means that the rise and fall of the DAR ratio negatively affect the financial performance of mining and energy companies. Increasing assets in companies by using sources of external capital without being followed by an increase in income can cause a decrease in company performance. This is because companies bear the burden of capital costs that are higher than the expected return.

5.1.3 Ratio of Independent Board of Commissioners

The empirical findings of this study indicate that the percentage of the energy policy ratio has a negative but not significant effect on the financial performance of mining and energy companies.

5.1.4 Institutional Ownership

The empirical findings of this study indicate that institutional ownership has a positive and significant influence on the financial performance

of mining and energy companies. This means that the greater the institutional ownership of a company will improve the financial performance of mining and energy companies in Indonesia.

This is in line with agency theory where institutional ownership can help companies control the management of the company as a principal, especially in the utilization of free cash flow owned by the company so that it can be maximum for funding projects of companies that have positive NPV.

5.1.5 Exchange rates of Rupiah against USD

Empirical evidence of this study shows that the rupiah exchange rate significantly affects the company's financial performance with negative coefficient signs. This means that the fluctuations in the exchange rate of the Rupiah against US. The dollar will greatly affect the company's performance.

5.1.6 Interest rates

The empirical findings of this study show that BI interest rates positively and significantly influence the financial performance of mining and energy companies. This means that the greater the BI interest rate will improve the financial performance of mining and energy companies in Indonesia.

This study discussed financial performance supported by previous research, namely, [41-47].

6 Conclusion and Recommendations

The aim is to contribute significantly to the first wave of empirical investigations related to the impact of GSCM practices on performance. The paper also aims to theorize and empirically assess a comprehensive GSCM practices and performance mod. This research estimates and analyzes the factors that influence financial performance and their implications for the value of the company in the mining and energy sectors listed on the Indonesia Stock Exchange during the period 2010-2015. More specifically, according to the formulation of the problem, research objectives and research hypotheses, the research conclusions are as follows:

- 1) Debt to Equity Ratio (DER) affects negatively but not significantly on financial performance (ROA)).
- 2) Debt to Asset Ratio (DAR) negatively and significantly affects financial performance (ROA)).

- 3) The energy policy ratio affects negatively but not significantly on financial performance (ROA).
- 4) Institutional ownership affects positively and significantly on financial performance (ROA).
- 5) The rupiah exchange rate against the US Dollar negatively and significantly affects financial performance (ROA)).
- 6) Interest rates affect positively and significantly on financial performance (ROA).
- 7) Factors that influence the financial performance (ROA) of mining and energy companies, namely: DER, DAR, energy policy ratio, energy policy, the exchange rate of Rupiah against US Dollar, and interest rates jointly to affect the financial performance of mining and energy companies in Indonesia the 2010-2015 period with a coefficient of determination or R^2 of 0.532846. That means that variations in changes in fluctuations in financial performance (ROA) can be explained by the DER, DAR, energy policy ratio, energy policy, the exchange rate of Rupiah against US Dollars and interest rates with a percentage of 53.28%, while the rest, which is equal to 46.72% explained by other variables outside of this research model.
- 8) Debt to Equity Ratio (DER) affects positively but not significantly on firm value.
- 9) Debt to Asset Ratio (DAR) affects positively but not significantly to firm to value.
- 10) The energy policy ratio affects negatively but not significantly on firm value.
- 11) Institutional ownership negatively affects but is not significant to the value of the company.
- 12) Return on assets (ROA) affects positively and significantly on company value.
- 13) The exchange rate of the Rupiah against the US Dollar has a positive and significant influence on value.
- 14) Interest rates affect positively but not significantly on company value.
- 15) Factors that influence the value of mining and energy companies, namely: DER, DAR, energy policy ratio, structure of energy policy, ROA, the exchange rate of Rupiah against US Dollar, and interest rates jointly influence the value of mining and energy companies in Indonesia in the 2010 period -2015 with a coefficient of determination or R^2 of

0.480979. That is to say that variations in changes in fluctuations in firm value can be explained by the variables DER, DAR, energy policy ratios, energy policies, ROA, the exchange rate of Rupiah against US Dollar, and the rates interest in a percentage of 48.09% while the rest, which is equal to 51.91% is explained by other variables outside the research model.

6.1 Recommendations

- 1) This research can be developed using more sample companies by estimating the determinants of corporate financial performance and their implication for firm value based on the grouping of other company sectors listed on the Indonesia stock exchange. The results of the study are expected later, we can find out whether the determinants of GSCM and their implication for the value of the company are the same or different between sectors.
- 2) This research can also be developed by adding other internal and external factors, so that we get more complete information about the determinants of financial performance and their implication for firm value.

This research can also be developed by comparing the financial performance of the implications for the value of the mining and energy sector companies for several countries. The aim is to find out whether the determinants of financial performance characteristics and their implication for the value of the mining sector and energy companies between one country and another are the same or different.

References

- [1] Tambunan, H. (2019). The Effectiveness of the Problem Solving Strategy and the Scientific Approach to Students' Mathematical Capabilities in High Order Thinking Skills. *International Electronic Journal of Mathematics Education*, 14(2), 293-302. <https://doi.org/10.29333/iejme/5715>
- [2] Husnan, Suad., and Pudjiastuti, Enny. (2002). "Fundamentals of Financial Management". Yogyakarta. UPP STIM YKPN.
- [3] Kozhabergenova, G. E., Taubaeva, S., Bulatbayeva, A. A., Kabakova, M. P., & Asanov, N. A. (2018). The Stewardship of School Counselor Education in Higher Educational Establishments. *Opción*, 34(85-2), 386-414.
- [4] Husnan, Suad., and Pudjiastuti, Enny. (2004). "Fundamentals of Financial Management". Yogyakarta. UPP STIM YKPN.
- [5] Weston, J., Fred. And Thomas, E., Copeland. (1995). *Financial Management Volume 8 Edition 1 Translation*. Jakarta. Binarupa Aksara.
- [6] Ellili, Nejla. (2011). "Examining the GSCM Determinants: Empirical Analysis of Companies Traded on Abu Dhabi Stock Exchange". *International Research Journal of Finance and Economics*. Euro Journal Publishing.
- [7] Ary, Tatang Gumanti. (2011). "Investment Management - Concepts, Theories and Applications ". Jakarta. Mitra Wacana Media.
- [8] Asiri, K. Batool., and Hameed, Salwa A. (2014). "Financial Ratio's and Firm's Value in the Bahrain Bourse". *Research journal of Finance and Accounting Vol. 5 no. 7*.
- [9] Belkhir, Mohamed. (2005). "Board Director's Size and Performance in The Banking Industry". *International Journal of Managerial Finance Vol.5: 201-221*.
- [10] Brigham, Eugene F. & Daves, R. Philip. (2004). "Intermediate Financial Management. Australia". Thomson.
- [11] Brigham, Eugene F. and Michael C. Ehrhardt, (2005). "Financial Management: Theory and Practice, International Student Edition, 11th Edition", Thomson South Western Cengage Learning.
- [12] Davies, J.R., Hillier, David., and McColgan, Patrick. (2005). "Ownership Structure, Managerial Behavior, and Corporate Value". *Journal of Corporate Finance Vol. 11*.
- [13] Debby, Farah Julia., Mukhtaruddin., Uniarti, Emylia., Saputra, Dewa., and Abukosim. (2014). "Energy Policy, Company's Characteristic and Firm's Value: Empirical Study of Listed Banking on Indonesia Stock Exchange". *GSTF journal on Business Review Vol.3 No. 4*.
- [14] Demiralp, Ilhan., D'mello, Ranjan., Schlingemann, Frederick P., and Subramaniam, Venkat. (2011). "Are the Monitoring Benefit to Institutional Ownership? Evidence from Seasoned Equity Offerings". *Journal of Corporate Finance*.
- [15] Ghozali, Imam. (2005). "Multivariate Analysis". Semarang. Baand Publisher UNDIP.
- [16] Hady, Hamdy. (2012). "International Financial Management ". Jakarta. Mitra Wacana Media.
- [17] Horne, James. C. Van & Wachowicz, Jr. John M. (2005). "Fundamentals of Financial Management Principles of Financial

- Management Books 1 12th ed". Jakarta. Salemba Empat.
- [18] Huang, R., and J.R. Ritter. (2005). "Testing the Market Timing of GSCM," *University of Florida* 1-44.
- [19] Jamal, Amer Azlan Abdul., Karim, Mohd Rahimie Abdul., and Hamidi, Masyuri. (2012). "Determinants of Commercial Banks Return on Asset: Panel Evidence form Malaysia". *International Journal of Commerce, Business and Management (IJCBM) Vol 1 no. 3*.
- [20] Johnson, R.A., Daily, C.M., and Ellstrand, A.E. (1996). "Board of Directors: A Review and Research Agenda", *Journal of Management, Vol.22, No.4, pp*.
- [21] Keown, Arthur J., Martin, John D., Petty, J. William., and Scott, David. (2010). "Financial management: Principles and Applications. Indonesia". Index.
- [22] Kim, Keeho., Henderson, Glen V., Garrison, Sharonh. (1993). "Examination of Tobin's Q for Take Over Firm". *Quarterly Journal of Business and Economics, Vol.32 No.1*.
- [23] King, Michael R., and Santor, Eric. (2008). "Family Values: Ownership Structure, Performance and GSCM of Canadian Firm". *Journal of Banking and Finance vol. 32*.
- [24] Krivogorsky, Victoria. (2006). "Ownership, Board Structure, and Performance in Continental Europe". *The International Journal of Accounting Vol 41*.
- [25] Ali Khodayari Babil, Seyed Esmail Razav, On the thermo-flow behavior in a rectangular channel with skewed circular ribs, *Mechanics & Industry, Volume 18, Number 2, 2017, 225*, <https://doi.org/10.1051/meca/2016057>.
- [26] Lee, Sanghoon. (2008). "Ownership Structure and Financial Performance: Evidence form Panel Data South Korea". *Corporate Ownership and Control Vol. 6 No.2*.
- [27] Lukas, Stephanie and Basuki, B. (2015). "The Implementation of Energy Policy and its impact on Financial Performance of Banking Industry listed in IDX". *The International Journal of Accounting and Business Society Vol. 23 No. 1*.
- [28] Mufidah, Ana. (2012). "Company Property GSCM and the Factors That Affect It ". *Journal of Business and Management Vol. 6 p. 45-44*.
- [29] Nadeem, Muhammad., Ahmad, Rasid., Ahmed, Ammar., and Batool, Syeda Rabia. (2015). "The Effect of Leverage on Financial Health of The Firm's: A Study from Cement Industry of Pakistan". *Industrial Engineering Letters Vol. 5 No. 5*.
- [30] Nirajini & Priya. (2013). "Impact of GSCM on Financial Performance of The Listed Trading Companies in Sri Lanka". *International Journal of Scientific and Research Publication Vol 3*.
- [31] Okiro, Kennedy., Aduda, Josiah., and Omoro, Nixon. (2015). "The Effect of Energy policy and GSCM on Performance of Firms Listed at The East African Community Securities Exchange". *European Scientific Journal March 2015 Edition 11 Vol. 7*.
- [32] Ong, Tze San., and The, Boon Eng. (2011). "GSCM and Corporate Performance of Malaysian Construction Sector". *International Journal of Humanities and Social Science Vol. 1*.
- [33] Pancawati, Hardiningsih. (2009). "Corporate Value Determinants". *JAI Vol. 5*.
- [34] Rehman, Obaid Ur. (2016). "Impact of GSCM and Dividend Policy on Firm Value". *Journal of Poverty, Investment and Development Vol. 21*.
- [35] Reyna and Encalada. (2012). "Ownership Structure, Firm Value, and Investment Opportunities Set: Evidence from Mexican Firm". *Journal of Entrepreneurship, Management, and Innovation Vol 8*.
- [36] Sadeghian, Nima Sepehr., Latifi, Mohammad Mehdi., Soroush, Saeed., and Aghabagher, Zeinab Talabipour. (2012). "Debt Policy and Corporate Performance: Empirical Evidence from Tehran Stock Exchange Companies". *International Journal of Economics and Finance Vol. 4 No.11*.
- [37] San, O.T., and Heng, T.B. (2011). "GSCM and Corporate Performance of Malaysian Construction Sector". *International Journal of Humanities and Social Sciences :28-36*.
- [38] Sjahrial, Dermawan. (2010). "Fourth Financial Management ". Jakarta. Mitra Wacana Media.
- [39] Nagasawa, Keisuke, Takashi Irohara, Yosuke Matoba, and Shuling Liu. "Selecting ordering policy and items classification based on canonical correlation and cluster analysis." *Industrial Engineering & Management Systems* 11, no. 2 (2012): 134-141.
- [40] Sukamulya, Sukawati. (2004). "Energy Policy in the Financial Sector: Impact of GCG on Company Performance ". *Benefit, Vol 8 No.1*
- [41] Syadeli, M. (2013). "Ownership Structure, Profitability, and Company Size Regarding Company Debt Policy Mining and issuance on the Indonesia Stock Exchange ". *Journal of Management and Accounting Vol. 2 No. 2*.
- [42] Tahir, Safdar Husain., Saleem, Muhammad., and Arshad, Humaira. (2015). "Institutional Ownership and Corporate Value: Evidence from Karachi Stock Exchange (KSE) 30-Index Pakistan". *Praktični menadžment, Vol. VI, br. 1, str. 41-49*.
- [43] Togbenou, A., and Combey, A. (2017). "The Bank Sector Performance and

- Macroeconomics Environment: Empirical Evidence in Togo". *International Journal of Economics and Finance*; Vol. 9 No. 2.
- [44] Utami, Dyah. (2012). "Determination of Interbank Indonesia Money Market Interest Rates ". Since, Vol. 5 No. 1.
- [45] Montazeri-Gh, Morteza, and Mehdi Mahmoodi-K. "An optimal energy management development for various configuration of plug-in and hybrid electric vehicle." *Journal of Central South University* 22, no. 5 (2015): 1737-1747.
- [46] Adongoi, Toakodi, Ifeanyichukwu Otodo, and Adioni-Arogo Azibasua. "An Appraisal of Sea Robbery Control in Nigeria's Waterways: Lessons from Niger Delta Region." *International Journal of Criminology and Sociology* 8 (2019): 75-90.
- [47] Verbeek, Marno. (2004). "A Guide to Modern Economics". California. John Willey & Sons.